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Lilly Hospital Pharmacy Survey

1990

A survey of the 1989 operations of 1,643 hospital pharmacies provided to hospital pharmacy directors in the interest of sound management

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Corporate Mission

Eli Lilly and Company is a research-based corporation that develops, manufactures, and markets pharmaceuticals, medical instruments, diagnostic products, and agricultural products.

To guide its affairs, the company follows certain fundamental principles. These principles, which we believe are in the best long-term interests of all shareholders, are the following:

The company is committed to the discovery and marketing of innovative products of the highest quality that offer benefits to customers in all of our markets.

The company is dedicated to the highest levels of ethics, integrity, and excellence in research, manufacturing, marketing, and all other phases of its operations.

The company recognizes a primary responsibility to its employees because of the key role employees play in the achievement of corporate goals.

The company's objective is to attract and retain outstanding people at all levels and in all parts of the organization. It is committed to fair and equitable treatment of all employees and to policies and programs that offer the opportunity for employees to develop meaningful and rewarding careers.

The company feels an obligation to be a good corporate citizen wherever it operates. ■

Foreword

Questionnaires sent to hospital pharmacies throughout the United States yielded 1,643 usable respondents to this year's LILLY HOSPITAL PHARMACY SURVEY. The findings make up the 1990 SURVEY, the 14th consecutive year the report has been published. This response reflects the continuing interest of hospital pharmacists in the economic information contained in the SURVEY as well as the importance they attach to it as a resource for their management decisions. Over 76% of these respondents have participated in the LILLY HOSPITAL PHARMACY SURVEY for two consecutive years.

In response to suggestions from pharmacists, an expanded analysis of available pharmacy services and use of computer applications have been added.

The SURVEY represents averages of data reported. No attempt has been made to define or structure the sample, nor does the report claim to describe what constitutes optimal or successful hospital pharmacy practice.

Since not all respondents answered every question in the SURVEY, some of the charts and tables are based on data from fewer than the total number of participants. In some tabulations, sample sizes were not large enough to be statistically useful.

Eli Lilly and Company is pleased to provide this publication as a service to all who are interested in hospital pharmacy practice. It is hoped that the SURVEY will prove useful to managers of hospital pharmacies for both current operations analysis and for future planning. ■

Executive Summary

Key operating data tabulated to reflect a composite profile of the "average" hospital pharmacy in the United States appear in Table 1. This hypothetical hospital pharmacy is derived mathematically from 1989 operating data supplied by 1,643 respondents. As such, these figures are probably too general to be used for direct comparison. On page 20, a comparative analysis work sheet is provided for pharmacy directors to input their data and analyze their department's statistics.

Table 1 shows that the average hospital had 246 beds, a 1.7% increase from the previous year. Census increased slightly from 60% to 61% during 1989. However, hospital census has generally trended lower since 1980, when it was 74%. Admissions increased 1.1% to around 7,800 per hospital. Patient days increased significantly to 61,194, the highest since 1983. Length of patient stay also increased to 7.8 days.

The number of hours the central pharmacy was open as well as hours worked by pharmacists and technicians all increased during 1989. In contrast, a decrease was seen in support personnel hours. Total FTEs (full-time equivalents) for pharmacy personnel increased 5% in 1989. Pharmacist hours per week advanced for the second consecutive year. Total pharmacist hours increased to 328 hours per week, almost 8% above the previous year. This was the largest percent increase in pharmacist hours since 1981.

The dollar value of inventory increased during 1989. The average hospital pharmacy inventory was about $140,000, which represents a 3.1% increase over the previous year. Because of the dramatic increase in patient days, inventory per patient day decreased for the second consecutive year to $2.30. In addition, inventory per bed increased to $572; inventory per occupied bed decreased slightly to $937; inventory per admission advanced by 2% to $17.93.

Purchases continued to climb in 1989 to over $1.4 million per hospital pharmacy, an increase of 5.1%. It is interesting to note that purchases per patient day decreased while purchases per bed, per occupied bed, and per admission were up over the previous year. Since 1985, purchases have increased almost one third, even though inventory has increased only 12%. Directors of hospital pharmacy may have been able to effectively utilize wholesalers to possibly hold down inventory in light of increased purchases. This year, the average inventory turnover ratio reached 10.2 times for participants, the highest in the history of the LILLY HOSPITAL PHARMACY SURVEY.

Central pharmacy floor area increased slightly during 1989. One explanation for this could be a shift in reporting hospitals in this year's SURVEY. The 1989 sample contains a smaller percent of hospitals with less than 200 beds.

Table 1 Average hospital pharmacy

	1989 *(1,643 Hospitals)*	**1988** *(2,048 Hospitals)*	**Percent of Change**
Bed capacity	**246**	242	+ 1.7%
Class	**private nonprofit**	private nonprofit	
Profile	**general**	general	
Census *(beds occupied)*	**61%**	60%	
Admissions	**7,842**	7,754	+ 1.1%
Patient days	**61,194**	52,998	+15.5%
Length of patient stay	**7.8 days**	6.8 days	+14.7%
Hours central pharmacy open/week	**98**	96	+ 2.1%
Pharmacist hours/week	**328 (8.2 FTE)**	304 (7.6 FTE)	+ 7.9%
Technician hours/week	**299 (7.5 FTE)**	284 (7.1 FTE)	+ 5.3%
Support personnel hours/week	**118 (3.0 FTE)**	125 (3.1 FTE)	− 5.6%
Inventory	**$140,603**	$136,311	+ 3.1%
	$2.30/patient day	$2.57/patient day	−10.5%
	$ 572/bed	$ 563/bed	+ 1.6%
	$ 937/occupied bed	$ 939/occupied bed	− 0.2%
	$17.93/admission	$17.58/admission	+ 2.0%
Purchases	**$1,432,530**	$1,363,335	+ 5.1%
	$23.41/patient day	$25.72/patient day	− 9.0%
	$5,823/bed	$5,634/bed	+ 3.4%
	$9,546/occupied bed	$9,389/occupied bed	+ 1.7%
	$182.67/admission	$175.82/admission	+ 3.9%
Inventory turnover rate	**10.2**	10.0	
Floor area (central pharmacy)	**1,758 sq ft**	1,726 sq ft	

Hospital Data

Chart 1 shows the distribution of respondents by bed capacity. The 1990 distribution of SURVEY participants by bed capacities is slightly weighted to the high side when compared with that reported last year. General hospitals, which account for 61.3% of the respondents, are concentrated in the 100-199 bed capacity. Specialized hospitals are concentrated in the more than 499 bed categories. To be classified as specialized, a hospital should offer complex services such as open heart surgery, kidney transplants, or dialysis on a routine basis. The majority of responding psychiatric hospitals fell into categories of 200 beds and over.

Chart 2 looks at the 1989 LILLY HOSPITAL PHARMACY SURVEY sample according to hospital classification. Private, nonprofit facilities make up almost 63% of the sample—up slightly from last year. Government hospitals (city, county, state) composed 23.5% of the sample. It is interesting to note in Chart 3 that the for-profit hospitals included more psychiatric hospitals than specialized hospitals, which has not occurred since 1986.

Hospital pharmacies that participate in a teaching program for physicians in conjunction with a medical school account for 35% of the respondents. Only 20% of all for-profit institutions reported participating in such a program. Outside organizations managed 5.6% of the hospital pharmacies that reported, primarily in general hospitals with less than 100 beds.

Over 86% of responding hospital pharmacies indicated they utilized a unit-dose distribution system as their primary means of drug distribution during 1989. In addition, about 87% indicated they provided full-coverage parenteral admixture service; virtually all specialized hospitals continue to offer this service.

Allocation of beds by medical service in general and specialized hospitals is shown in Figures A and B. General hospitals have a high percent of general medical/surgical beds while specialized hospitals report a relatively high percent of

Chart 1 Number of hospitals reporting, by bed capacity

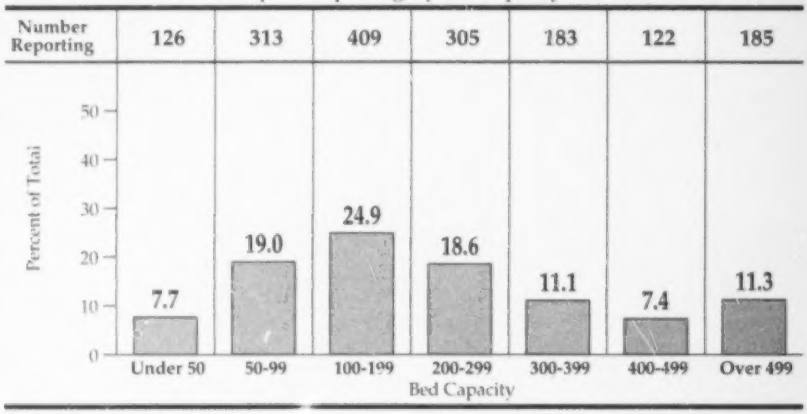


Chart 2 Identification of hospital classification

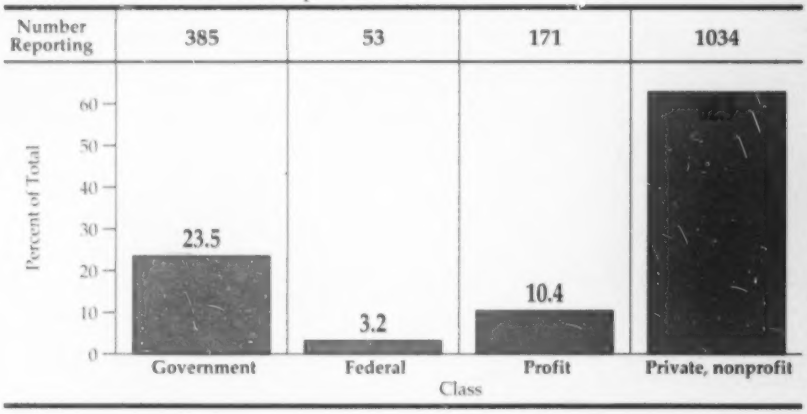
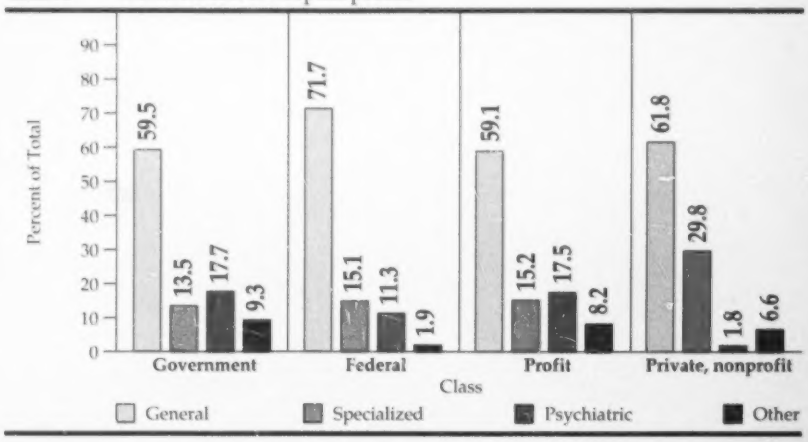


Chart 3 Identification of hospital profile



acute care beds that would include organ transplant, intensive care, oncology service, and burn center. As hospitals lose census in general/medical areas, many are continually looking for new areas in which to specialize that can provide both a needed medical service to the community and a reimbursable revenue source for the hospital. Medical services, such as diabetes programs, alcohol rehabilitation, and psychiatric units, are areas where hospitals have expanded.

Table 2 expresses data in terms of patient days. In general hospitals, inventory per patient day fluctuated with the number of patient days. Inventory per patient day decreased as patient days increased in specialized hospitals until patient days exceeded 130,000 or more annually. In 1989, as in previous years, the highest purchases per patient day were in specialized hospitals with under 30,000 patient days. Staff payroll generally decreased as patient days increased, but was up across all categories when compared with 1988, except in specialized hospitals under 30,000 patient days. Pharmacy hours open per week increased slightly from last year. ■

Figure A General hospitals

Average allocation of beds by medical service

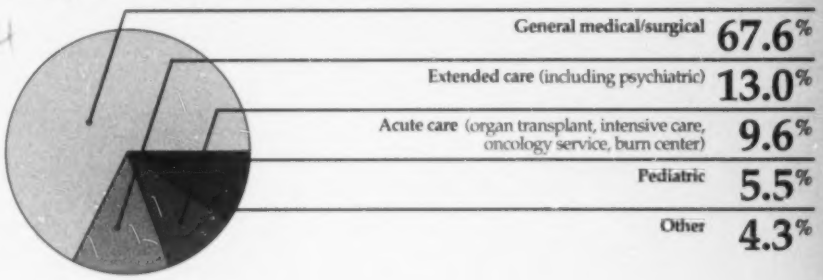

General medical/surgical 67.6%
Extended care (including psychiatric) 13.0%
Acute care (organ transplant, intensive care, oncology service, burn center) 9.6%
Pediatric 5.5%
Other 4.3%

Figure B Specialized hospitals

Average allocation of beds by medical service

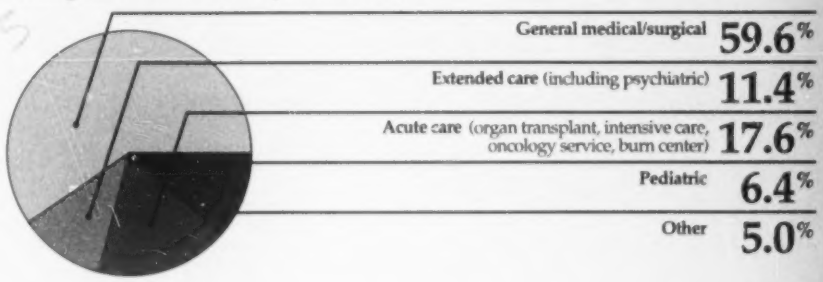

General medical/surgical 59.6%
Extended care (including psychiatric) 11.4%
Acute care (organ transplant, intensive care, oncology service, burn center) 17.6%
Pediatric 6.4%
Other 5.0%

Table 2 Pharmacy operating data by annual patient days

General

Annual Patient Days	Average Bed Capacity	Average Patient Days	Admissions	Inventory per Patient Day	Purchases per Patient Day	Total Staff Payroll per Patient Day	Pharmacy Hours Open/Week	Pharmacist Hours/Week	Technician Hours/Week
Under 15,000	64	8,457	2,021	$4.83	$29.90	$12.33	62	74	81
15,000-29,999	124	21,887	4,076	3.26	24.32	9.30	84	143	121
30,000-59,999	202	43,100	6,478	3.73	23.28	8.61	107	250	231
60,000-99,999	304	74,093	10,052	2.15	22.35	8.07	128	409	340
Over 100,000	560	156,414	21,554	2.37	23.60	8.52	138	837	664

Specialized

Annual Patient Days	Average Bed Capacity	Average Patient Days	Admissions	Inventory per Patient Day	Purchases per Patient Day	Total Staff Payroll per Patient Day	Pharmacy Hours Open/Week	Pharmacist Hours/Week	Technician Hours/Week
Under 30,000	115	16,578	3,216	$4.26	$36.95	$12.46	78	156	153
30,000-59,999	212	44,806	7,153	3.03	30.55	10.08	120	298	238
60,000-99,999	342	79,338	12,636	2.43	27.94	10.33	148	554	451
100,000-129,999	459	113,684	16,510	2.26	28.61	10.07	154	708	623
Over 130,000	682	187,798	26,982	2.70	30.38	10.91	158	1,245	1,121

Geographic Summary

Table 3 shows a summary of selected operating statistics arranged according to geographic region. For the 14th consecutive year, the Middle Atlantic states reported the highest average bed capacity and census. In comparison with the 1988 operating data, it is interesting to note that the Middle Atlantic states and the New England states were the only regions to show a decrease in bed capacity.

Inventory generally increased from the previous year, with the exception of the East North Central region. Purchases increased in all regions, with the South Atlantic States again reporting the highest purchases per institution. The inventory turnover ratio, the number of times a hospital pharmacy purchases its inventory per year, increased in six regions from the previous year, with the East South Central Region reporting the highest turnover ratio of 10.9 times. For the second consecutive year, pharmacist hours per week increased. Four regions, the New England states, West North Central states, South Atlantic states, and West South Central states, had increases of at least 40 pharmacist hours per week over the previous year.

Pharmacist hourly wage is derived by dividing total pharmacist payroll (staff, management, and clinical) by the total number of hours worked per week. Because these figures are composite values, direct comparison with individual salaries should be avoided. The average pharmacist hourly wage nationwide rose 5.8% to $20.18 in 1989. The 16% increase in pharmacist hourly wages in the New England states was the largest of any region. The Pacific states once again reported the highest hourly wage. ■

Table 3 Geographic summary of selected operating data

Region	Bed Capacity	Inventory	Purchases	Inventory Turnover Ratio*	Percent of Census	Purchases/ Occupied Bed	Percent Purchased Through Wholesaler	Pharmacy Hours Open	Pharmacist Hours/ Week	Technician Hours/ Week	Pharmacist Hourly Wage†
New England States CT, MA, ME, NH, RI, VT	239	$135,075	$1,214,803	9.0	74%	$ 6,869	81%	83	300	264	$20.84
Middle Atlantic States NJ, NY, PA	288	160,312	1,494,195	9.3	77	6,738	77	94	352	264	20.69
East North Central States IL, IN, MI, OH, WI	260	143,619	1,512,788	10.5	55	10,579	84	105	333	309	20.43
West North Central States IA, KS, MN, MO, ND, NE, SD	215	112,413	1,180,388	10.5	52	10,558	87	95	303	272	19.23
South Atlantic States DC, DE, FL, GA, MD, NC, SC, VA, WV	270	165,712	1,797,424	10.8	63	10,567	82	102	365	385	20.77
East South Central States AL, KY, MS, TN	223	128,705	1,407,362	10.9	57	11,072	83	98	280	274	19.92
West South Central States AR, LA, OK, TX	221	133,265	1,423,524	10.7	50	12,883	83	92	351	343	16.08
Mountain States AZ, CO, ID, MT, NM, NV, UT, WY	171	116,019	940,595	8.1	50	11,001	83	99	245	168	18.74
Pacific States AK, CA, HI, OR, WA	241	134,857	1,370,957	10.2	61	9,326	86	106	327	300	22.95
United States Average	246	140,603	1,432,530	10.2	61	9,546	83	98	328	299	20.18

*Estimated inventory turnover rate = $\frac{\text{Yearly purchases at cost}}{\text{Average inventory at cost}}$

†Average for all pharmacists, including directors.

Pharmacy Operations Management

The data in Table 4 reflect productivity of pharmacy staffs from both general and specialized hospitals according to bed capacity. In this table, the response from specialized hospitals under 100 beds was not sufficient to be included. The focus of Table 4 relates pharmacy department personnel to the output accomplished by the departments. These data may provide benchmarks with which directors can compare and evaluate departmental data.

The average bed capacity falls roughly in the middle of each range for general and specialized institutions, with the general and specialized institutions over 499 beds averaging 720 and 691 beds respectively. Census, central pharmacy hours open per week, and length of patient stay tend to rise as bed capacity increases regardless of hospital profiles. Larger hospitals tend to have longer lengths of stay since these hospitals may provide a broader range of services and usually treat more acutely ill patients. It is not surprising that specialized hospitals have slightly more pharmacy hours open per week than general hospitals since they may offer more services.

One indication of pharmacy staffing is personnel hours worked per occupied bed. Among general hospitals with 100 beds or more, pharmacist hours worked per week per occupied bed remains about the same regardless of hospital size. The specialized hospitals surveyed all required about 2.4 pharmacist hours per week per occupied bed. In general hospitals of 200 beds or more, technician hours worked per week per occupied bed remain relatively the same as bed capacity increases, whereas in specialized facilities, this ratio narrowly fluctuates in relation to bed capacities. Support personnel hours per week per occupied bed exceeds 1.0 only in general hospitals with less than 100 beds. Hospital pharmacies, both general and specialized, report about one half hour of support personnel time worked per week per occupied bed in hospitals of 200 beds or more. Total weekly staffing (pharmacist, technician, and support personnel) per occupied bed tends to stay around five hours in specialized hospitals with 200 beds and over and about 4.2 in general hospitals with 200 beds and over. These data would seem to indicate, as in previous years, that specialized hospitals need about 20% more personnel hours per occupied bed than general hospitals in order to staff adequately for the workload.

Total annual staff payroll per occupied bed declines quickly with rising bed capacity and then levels off to a narrow range for general hospitals with 100 beds or more. Specialized hospitals fluctuate without any trends relating to bed capacity. Annual staff payroll per occupied bed for specialized hospitals is usually higher than general hospitals because of the additional professional staff that may be needed to provide expanded clinical and ancillary services.

In both general and specialized hospitals, average inventory per occupied bed declines as bed capacity increases until bed capacity

Table 4 Operations management

General

Operating Statistics	Under 50	50-99	100-199	200-299	300-399	400-499	Over 499
Average bed capacity	36	73	137	236	340	435	720
Census (%)	39	45	56	63	64	64	71
Central pharmacy hours open/week	50	67	90	111	132	154	130
Length of patient stay (days)	4.8	4.5	6.1	7.0	6.2	7.2	9.2
Pharmacist hours/week*	3.8	2.8	2.2	2.0	2.0	2.1	2.1
Technician hours/week*	5.8	2.6	2.0	1.7	1.7	1.7	1.6
Support personnel hours/week*	3.3	1.5	0.7	0.5	0.5	0.4	0.6
Total annual staff payroll*	$ 4,852	$3,867	$3,121	$2,890	$3,133	$3,262	$ 3,285
Inventory*	$ 2,095	$1,457	$1,041	$ 920	$ 917	$ 808	$ 1,069
Purchases*	$12,494	$9,474	$8,156	$8,426	$8,317	$8,260	$10,171
Nonparenteral orders/week*	136	105	150	119	93	97	92
Parenteral orders/week*	12	13	14	12	10	11	8
Central pharmacy floor area (sq ft)	500	740	1,198	1,884	2,594	2,840	4,818
Orders/staff hour worked	11	17	33	31	25	26	23
Productivity indicator (see page 19 for productivity work sheet)	0.73	0.75	1.39	1.28	1.35	1.26	1.32

*Figured on a per-occupied-bed basis.

exceeds 499. Purchases per occupied bed in general hospitals fluctuate across all bed capacities, with pharmacies in smaller hospitals reporting higher purchases per occupied bed. Pharmacies in general hospitals with 100-199 beds reported the lowest purchases per-bed figure, about $8,200. Purchases per occupied bed for specialized hospitals tend to stay in a narrow range around $10,000 with the highest amount of purchases per occupied bed in bed capacities exceeding 499.

Nonparenteral orders include unit-dose and multidose inpatient drug orders as well as outpatient prescriptions. Not included in nonparenteral orders were prescriptions from retail pharmacies that were owned and operated by the hospital. In both general and specialized hospital pharmacies, nonparenteral orders dispensed per week per occupied bed did not show a real trend, but hospitals with more than 499 beds reported the least number of nonparenteral orders dispensed per occupied bed. Parenteral orders include hyperalimentation preparations, irrigation solutions, small- and large-volume IV admixtures, antineoplastic agents, and reconstitutions. General hospitals with over 499 beds reported eight parenteral orders per week per occupied bed, the lowest of all categories. About 13 parenteral orders were dispensed per week per occupied bed in specialized hospitals with over 299 beds.

By dividing the sum of all weekly medication units dispensed by the total number of weekly hours for pharmacists, technicians, and support personnel, a number for comparison can be derived. The resulting figure (orders per staff hour worked) is very general because it does not differentiate between the complexity of various types of orders; therefore, comparison to this number may not give an accurate picture about productivity. In general hospitals, medication orders per staff hour peaked at 100-199 beds, while in specialized facilities, the peak was reached at 200-399 beds.

Productivity indicator figures were calculated and are shown in Table 4. When the productivity indicator is less than 1, pharmacy staff hours in some cases may be greater than the workload calls for, which would suggest possible overstaffing. An indicator of 1 suggests that pharmacy staffing and workload are probably in balance. An indicator greater than 1 suggests that the pharmacy staff is generally more productive than usual.

A productivity work sheet on page 19 allows individual pharmacy directors to calculate their department's productivity for comparison with the averages. Comparison of individual pharmacy productivity figures with those of hospitals of similar size and profile yields useful information, since certain efficiencies appear related to size. The most meaningful information is comparing the productivity figures of an individual hospital from year to year.

Standard time values for specific tasks are shown in Table 18. The values vary by bed capacity in order to accommodate inherent differences between hospitals of different sizes. Regardless of the value of the indicator, the trends across bed capacities and over time continue to be of interest.

It should be noted that, to calculate the productivity index with greater accuracy, specific questions concerning outpatient prescriptions and multidose prescriptions were added to the 1990 participation form. This may account for variations of the index from the previous year. ■

Table 4 Operations management (continued)

Specialized

Operating Statistics	100-199	200-299	300-399	400-499	Over 499
Average bed capacity	161	241	338	446	691
Census (%)	59	64	68	71	70
Central pharmacy hours open/week	98	127	148	154	161
Length of patient stay (days)	6.8	6.4	6	6.0	7.3
Pharmacist hours/week*	2.4	2.5	2.5	2.2	2.5
Technician hours/week*	2.0	1.8	2.1	1.9	2.2
Support personnel hours/week*	0.9	0.7	0.5	0.5	0.6
Total annual staff payroll*	$ 3,655	$ 3,566	$ 3,815	$ 3,478	$ 4,066
Inventory*	$ 1,230	$ 989	$ 893	$ 840	$ 993
Purchases*	$11,412	$9,926	$10,255	$10,083	$11,560
Nonparenteral orders dispensed/week*	104	111	114	99	96
Parenteral orders/week*	15	12	13	13	13
Central pharmacy floor area (sq ft)	1,521	1,975	2,808	2,953	4,596
Orders/staff hour worked	22	25	25	24	21
Productivity indicator (see page 19 for productivity work sheet)	1.09	1.09	1.30	1.21	1.24

*Figured on a per-occupied-bed basis.

Inventory and Purchases

Table 5 shows that 83% of all hospital pharmacy purchases were through wholesalers. This is a one percentage point increase over the previous year.

Of the hospitals reporting in this year's SURVEY, well over 90% participated in cooperative buying groups. Table 6 shows the breakdown of hospitals in cooperative buying groups based on bed capacity and hospital classification.

Table 7 looks at pharmacy inventory and purchases according to hospital bed capacity. Inventory per patient day was the lowest in general and specialized hospitals with bed capacity of 400-499. Inventory turnover ratio was higher for specialized hospitals in comparison with general hospitals of similar size. As expected, specialized hospitals generally had higher purchases per annual patient day, perhaps because more complex procedures, which require more sophisticated pharmaceuticals, are performed in this type of hospital.

Table 8 shows hospitals that carried pharmaceuticals as well as IV fluids, irrigation solutions, and antimicrobial agents in pharmacy inventory. Inventory and purchases were generally higher than comparable hospitals shown in Table 7.

Hospitals that reported specific data on inventory of IV fluids, irrigation solutions, and antimicrobial agents are shown in Table 9; the purchases for these hospitals are reported in Table 10. ■

Table 5 Hospital pharmacy purchases from wholesalers

Bed Capacity	1989 (1,578 Hospitals)
Under 50	86%
50-99	88
100-199	87
200-299	84
300-399	80
400-499	80
Over 499	66
Average of all hospitals	83%

Table 6 Participation in cooperative buying groups

General

Bed Capacity	Hospital Membership
Under 50	92.5
50-99	93.2
100-199	96.5
200-299	98.0
300-399	89.9
400-499	97.3
Over 499	99.9

Specialized

Bed Capacity	Hospital Membership
Under 100	93.8%
100-199	94.6
200-299	99.9
300-399	99.9
400-499	94.4
Over 499	94.3

Table 7 Pharmacy inventory and purchases by bed capacity

General

Bed Capacity	Inventory	Purchases	Inventory Turnover Ratio*	Annual Patient Days	Inventory per Patient Day	Purchases per Patient Day
Under 50	$ 29,418	$ 175,409	6.0	5,172	$5.69	$33.92
50-99	47,870	311,208	6.5	11,974	4.00	25.99
100-199	79,883	625,717	7.8	27,644	2.89	22.63
200-299	136,811	1,252,718	9.2	53,882	2.54	23.25
300-399	199,481	1,809,751	9.1	77,960	2.56	23.21
400-499	225,028	2,299,548	10.2	98,090	2.29	23.44
Over 499	546,686	5,199,316	9.5	189,590	2.88	27.42

Specialized

Bed Capacity	Inventory	Purchases	Inventory Turnover Ratio*	Annual Patient Days	Inventory per Patient Day	Purchases per Patient Day
100-199	$116,878	$1,083,982	9.3	34,694	$3.37	$31.24
200-299	152,489	1,530,985	10.0	56,708	2.69	27.00
300-399	205,189	2,357,088	11.5	83,532	2.46	28.22
400-499	265,949	3,192,923	12.0	114,504	2.32	27.88
Over 499	480,383	5,591,623	11.6	176,790	2.72	31.63

*Estimated inventory turnover ratio = $\frac{\text{Yearly purchases at cost}}{\text{Average inventory at cost}}$

Table 8 Pharmacy inventory and purchasing (including IV fluids, irrigation solutions, and antimicrobial agents) by bed capacity

General

Bed Capacity	Inventory	Purchases	Inventory Turnover Ratio*	Annual Patient Days	Inventory per Patient Day	Purchases per Patient Day
Under 100	$ 49,977	$ 340,632	6.8	9,000	$5.55	$37.85
100-199	94,101	760,098	8.1	25,778	3.65	29.49
200-299	162,693	1,147,766	7.1	50,143	3.24	22.89
300-399	271,973	2,284,300	8.4	71,181	3.82	32.09
400-499	252,411	2,708,169	10.7	92,787	2.72	29.19
Over 499	382,564	5,181,444	13.5	169,666	2.25	30.54

Specialized

Bed Capacity	Inventory	Purchases	Inventory Turnover Ratio*	Annual Patient Days	Inventory per Patient Day	Purchases per Patient Day
100-199	$139,021	$1,342,494	9.7	25,765	$5.40	$52.11
200-299	173,791	1,842,317	10.6	55,406	3.14	33.25
300-399	204,653	2,612,514	12.8	80,665	2.54	32.39
400-499	313,275	3,633,139	11.6	107,733	2.91	33.72
Over 499	482,333	6,037,252	12.5	175,332	2.75	34.43

*Estimated inventory turnover ratio = $\frac{\text{Yearly purchases at cost}}{\text{Average inventory at cost}}$

Table 9 Pharmacy inventory (including IV fluids, irrigation solutions, and antimicrobial agents) by product

General

Bed Capacity	Under 100	100-199	200-299	300-399	400-499	Over 499
IV and irrigation fluids	$ 6,323	$10,163	$ 19,695	$ 18,671	$ 28,498	$ 41,388
Antimicrobial agents	10,053	19,553	40,645	54,714	58,442	31,808
Other pharmaceuticals	33,601	64,385	102,353	198,588	165,471	309,368
Total annual inventory	$49,977	$94,101	$162,693	$271,973	$252,411	$382,564

Specialized

Bed Capacity	100-199	200-299	300-399	400-499	Over 499
IV and irrigation fluids	$ 15,061	$ 16,381	$ 18,303	$ 43,645	$ 56,844
Antimicrobial agents	26,358	40,870	51,845	73,518	67,558
Other pharmaceuticals	97,602	116,540	134,505	196,112	357,931
Total annual inventory	$139,021	$173,791	$204,653	$313,275	$482,333

Table 10 Pharmacy purchases (including IV fluids, irrigation solutions, and antimicrobial agents) by product

General

Bed Capacity	Under 100	100-199	200-299	300-399	400-499	Over 499
IV and irrigation fluids	$ 47,999	$111,829	$ 145,704	$ 308,409	$ 300,978	$ 568,489
Antimicrobial agents	90,344	197,683	419,384	509,293	702,319	1,066,235
Other pharmaceuticals	202,289	450,586	852,678	1,466,598	1,704,872	3,546,720
Total annual purchases	$340,632	$760,098	$1,417,766	$2,284,300	$2,708,169	$5,181,444

Specialized

Bed Capacity	100-199	200-299	300-399	400-499	Over 499
IV and irrigation fluids	$ 112,124	$ 206,653	$ 341,105	$ 374,593	$ 786,181
Antimicrobial agents	272,584	487,373	706,832	1,000,929	1,220,589
Other pharmaceuticals	957,786	1,148,291	1,564,577	2,257,617	4,030,482
Total annual purchases	$1,342,494	$1,842,317	$2,612,514	$3,633,139	$6,037,252

Pharmacy Staff Compensation

Average annual payroll for each of the three pharmacy department staff components as well as hours worked per week are shown in Table 11 according to bed capacity and hospital profile. The average hourly wage figures for pharmacists, technicians, and support personnel may yield useful comparisons. Direct comparison with individual salaries should be avoided because table figures are composite values. This is especially true for pharmacists, since the difference in salary between an entry-level staff pharmacist and a senior director can be substantial. In general and specialized institutions, a trend in average hourly wages based on bed size can not be seen. The overall composite hourly wage for pharmacists is about $20, while hourly technicians' wages range from $8 to $12. Technician wages tend to be about 8% higher in specialized hospitals of 400 or more beds than in general hospitals of similar size. Larger, more sophisticated hospitals that offer expanded services tend to report higher professional and nonprofessional figures for staffing and payroll than do smaller hospitals.

A review of SURVEY statistics indicates that pharmacists are employed about 2.2 hours per week per occupied bed, whereas the rate for technicians is about 2.0 hours. These figures represent a slight increase in pharmacist and technician hours from the previous year.

SURVEY data concerning time spent on different functions indicate that about 69% of pharmacists' time is spent on drug distribution, about 16% on management duties, and about 15% on clinical practice. This shows a four percentage point shift in pharmacist distribution time to clinical services when compared with the previous year.

Volunteer hours per week exceed 20 hours for most categories. It appears that this level of activity is useful but probably not a major consideration for optimal efficiency. ■

Table 11 Pharmacy personnel hours and payroll

General

Bed Capacity	Pharmacist Hours/ Week	(FTE)	Annual Pharmacist Payroll	Technician Hours/ Week	Annual Technician Payroll	Support Personnel Hours/Week	Annual Support Personnel Payroll	Total Annual Payroll	Payroll/ Patient Day	Volunteer Hours/ Week
Under 50	51	(1)	$ 49,217	79	$ 32,937	46	$ 11,098	$ 93,252	$18.03	32
50-99	88	(2)	92,242	84	43,743	49	16,132	152,117	12.70	18
100-199	167	(4)	168,047	155	75,312	57	24,349	267,708	9.68	17
200-299	294	(7)	308,166	257	128,731	81	28,258	465,155	8.63	29
300-399	441	(11)	477,640	408	199,312	103	49,236	726,188	9.31	31
400-499	581	(15)	657,782	526	234,991	121	52,752	945,525	9.64	18
Over 499	1,062	(27)	1,165,359	861	438,477	319	111,175	1,715,011	9.05	62

Specialized

Bed Capacity	Pharmacist Hours/ Week	(FTE)	Annual Pharmacist Payroll	Technician Hours/ Week	Annual Technician Payroll	Support Personnel Hours/Week	Annual Support Personnel Payroll	Total Annual Payroll	Payroll/ Patient Day	Volunteer Hours/ Week
Under 100	98	(2)	$ 107,213	107	$ 43,984	36	$ 20,764	$ 171,961	$13.35	16
100-199	222	(6)	243,349	192	115,794	86	34,412	393,555	10.01	15
200-299	378	(9)	383,405	278	134,992	102	35,206	553,603	9.70	20
300-399	561	(14)	605,852	492	233,035	108	59,466	898,353	10.29	31
400-499	692	(17)	735,018	613	323,634	159	58,264	1,116,916	9.62	30
Over 499	1,212	(30)	1,346,194	1,084	569,819	277	137,530	2,053,543	11.14	62

Pharmacy Services

As a response to pharmacists, the lists of pharmacy services (Table 12) and computer applications (Table 13) have been expanded. Survey participants were asked to indicate the specific pharmacy services offered as part of their program. Table 12 lists percentages of general and specialized hospitals offering selected services. Most pharmacy services were listed more frequently by specialized hospitals than general hospitals.

During 1989, over 68% of responding hospital pharmacies reported using computers in some aspect of their operation. Patient billing, as shown in Table 13, continues to be the application most widely used. Larger hospitals reported using computers in a wide area of the hospital pharmacy, from monitoring patient profiles to drug utilization review.

With advances in software programs now catching up with hardware developments, computerization may soon be affordable for all hospitals. Indeed, as more information is being requested of hospital pharmacy directors, computers may well become a necessity for all hospitals in the near future. Chart 4 shows the increase of computer uses from 1988 to 1989. ■

Table 12 Pharmacy services offered

	General	Specialized
Monitoring drug interactions	90.4%	92.9%
Drug utilization review	92.9	97.0
In-service education	85.2	89.6
Monitoring patient profiles	84.0	88.3
Consultation with physicians	67.6	68.3
Drug information service	66.9	72.8
Regular pharmacy bulletin	61.2	73.1
Training programs	54.9	74.4
Pharmacokinetic service	38.5	50.0
Responding to CPR attempts	28.9	27.4
Patient counseling	23.2	37.1
Patient discharge interviews	14.3	25.9
Making rounds with physicians	8.2	36.5
Administration of drugs	3.0	2.8
Patient admission interviews	2.6	5.1

Chart 4 Computer Applications (1988-1989)

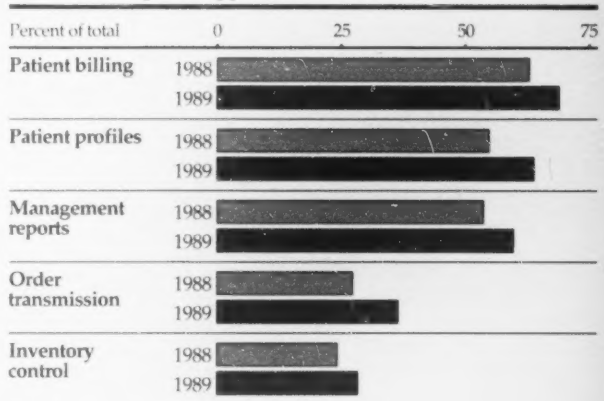


Table 13 Computer application according to bed capacity

	Total	Under 50	50-99	100-199	200-299	300-399	400-499	Over 499
Patient billing	68.4	46.8	56.5	69.9	75.1	80.9	82.0	67.6
Drug information	31.8	32.5	39.9	35.9	38.4	43.2	47.5	48.1
Patient profiles	63.2	34.1	43.5	57.7	73.4	78.7	86.1	81.1
Bar code scanning	23.5	5.6	3.8	5.4	38.4	43.2	47.5	48.6
Management report	59.3	33.3	46.3	53.3	67.9	72.1	77.0	73.5
Pharmacokinetic service	31.8	32.5	39.9	35.9	38.4	43.2	47.5	48.1
Order transmission	35.5	25.4	28.1	25.4	42.3	41.0	48.4	52.4
Drug utilization review	31.9	32.5	39.9	35.9	38.4	43.2	47.5	48.6
Inventory control	28.0	17.5	21.1	22.5	31.8	31.7	32.8	45.9

For-profit and Ancillary Operations

The increase in recent years of for-profit operations by hospitals and hospital pharmacies is evidence that areas other than traditional hospital pharmacy are being explored to increase revenue. As the length of patient stays decreases, the need for skilled care at home may increase. This year about 23% of the respondents to the SURVEY operate for-profit home health care businesses. Table 14 shows the percent of hospitals operating a home health care business and the services they offer. The percent of hospitals operating a home health care business was up in all reported segments except specialized hospitals with under 200 beds. Services most commonly offered by these home health care businesses are antibiotic therapy, fluid therapy, and pain management therapy.

It has possibly been a natural progression for many hospitals to expand into retail pharmacy. An ideal site for a retail pharmacy is a medical building adjacent or attached to the hospital. Many times these buildings are owned by the hospital. Often hospital pharmacies may be more efficient if they own a retail pharmacy since outpatient prescriptions can be filled at the retail pharmacy, which allows the hospital pharmacy to concentrate on inpatient services alone. Of course, records must be sufficiently maintained to show that products purchased at special "non-profit" prices are not sold in for-profit pharmacies.

About 18% of all responding hospitals now operate for-profit retail pharmacies. Table 15 indicates the percentages of hospitals by bed capacity that are operating for-profit retail pharmacies. There was a dramatic increase in the percent of specialized hospitals with over 499 beds operating for-profit retail pharmacies. This year, 57% of these hospitals reported they were operating retail pharmacies in contrast to 29% the previous year.

Operating data of for-profit retail pharmacies by bed capacity is shown in Table 16. Average annual prescription sales for all for-profit retail pharmacies was about $732,700, a 3.5% increase over the previous year. This is significantly higher than the $529,630 in prescription sales reported by the average retail pharmacy in the 1989 LILLY DIGEST.[1] The average prescription charge for these pharmacies dropped to $15.43 from $21.50 the previous year. It will be interesting to see if this is a one-year abbreviation or if prescription costs stay relatively low in this setting.

Hospital pharmacies have been able to generate an inventory turnover ratio of approximately 10.0 for the past two years. This skill seems to have been transferred from hospitals pharmacies to the for-profit retail pharmacies, which reported an inventory turnover ratio of 9.5. This exceeds the LILLY DIGEST respondents, who reported a ratio of 5.4.

Table 14 Hospitals operating for-profit home health care businesses and services offered

General

Bed Capacity	Percent of Total	Durable Medical Equipment	Total Parenteral Nutrition	Oncology Therapy	Nutrition Counseling	Oxygen Service	Antibiotic Therapy	Pain Management Therapy	Fluid Therapy
Under 100	16%	65%	57%	54%	85%	74%	85%	76%	79%
100-199	24	73	65	62	69	64	79	74	76
200-299	29	82	64	55	47	74	71	63	71
300-399	29	71	67	53	77	77	79	71	72
Over 399	38	76	63	50	47	76	71	50	56

Specialized

Bed Capacity	Percent of Total	Durable Medical Equipment	Total Parenteral Nutrition	Oncology Therapy	Nutrition Counseling	Oxygen Service	Antibiotic Therapy	Pain Management Therapy	Fluid Therapy
Under 200	13%	67%	67%	67%	20%	50%	67%	67%	67%
200-299	29	56	99	87	69	[illegible]	99	79	93
300-399	29	68	82	68	57	[illegible]	91	78	82
400-499	30	82	85	74	60	79	84	72	79
Over 499	49	77	88	81	74	76	91	90	91

Average satellite pharmacy operating data tabulated for general and specialized hospitals are found in Table 17. It is apparent that as bed capacity grows, the percentage of pharmacies offering satellite pharmacy services also increases, regardless of profile. About 21% of respondents have satellite pharmacy services as compared with 18.5% the previous year. Over 67% of the hospitals with 500 beds or more have satellite pharmacies. ■

1. 1989 LILLY DIGEST, Table 1, page 3.

Table 15 Hospitals operating for-profit retail pharmacies

General		Specialized	
Bed Capacity	Percent of Total	Bed Capacity	Percent of Total
Under 200	5%	Under 200	9%
200-299	17	200-299	21
300-399	23	300-399	28
400-499	41	400-499	45
Over 499	22	Over 499	57

Table 16 Operating data of for-profit retail pharmacies

All Hospitals Responding

Bed Capacity	Average Number of Prescriptions	Annual Prescription Sales	Average Prescription Cost	Average Inventory	Annual Purchases	Hours Open/ Week	Pharmacist Hours/ Week	Technician Hours/ Week
Under 200	21,111	$ 319,068	$15.11	$38,932	$ 243,979	61	61	84
200-299	34,938	655,846	18.77	46,820	398,588	64	62	44
300-399	57,806	764,205	13.22	61,296	534,352	76	103	74
400-499	54,376	969,538	17.83	72,193	716,096	58	87	63
Over 499	68,203	1,197,248	17.55	96,241	1,089,577	67	140	111

Table 17 Satellite pharmacy operations

General

Bed Capacity	Percent Operating Satellites	Percent Operating Two or More Satellites*	Hours Open/ Week†	Pharmacist Hours/Week†	Technician Hours/Week†
Under 300	7%	30%	47	57	56
300-399	25	35	52	73	84
400-499	46	63	48	59	53
Over 499	67	79	40	42	41

Specialized

Bed Capacity	Percent Operating Satellites	Percent Operating Two or More Satellites*	Hours Open/ Week†	Pharmacist Hours/Week†	Technician Hours/Week†
Under 300	20%	50%	36	49	42
300-399	48	58	95	68	65
400-499	54	63	50	54	31
Over 499	79	74	73	87	79

*Percentages figured from hospitals reporting one or more satellite pharmacies. †Per satellite

Conclusion

Hospital pharmacy management is constantly challenged to improve operational efficiency, control cost, and expand services. One of the challenges met by hospital pharmacists in the 1980s was the improved management of inventory. Inventory turnover has gone from 5.3 times in 1980 to 10.2 times in 1989. This increase in turnover rate may be related to the growth of wholesaler purchases. This relationship is shown in Chart 5.

Hospital pharmacies have been successful in expanding services to areas such as home health care and for-profit retail pharmacies. The ability of hospital pharmacies to remain successful and profitable in these businesses will be tested in the future by the increased competitiveness of the marketplace.

If pharmacy managers are to be successful in the future, it is essential that they analyze and remain aware of emerging trends. It is the hope of Eli Lilly and Company that this SURVEY will contribute to the success of hospital pharmacy now and in the future. ■

Chart 5 Average hospital pharmacy turnover and percent wholesaler purchases (1980-1989)

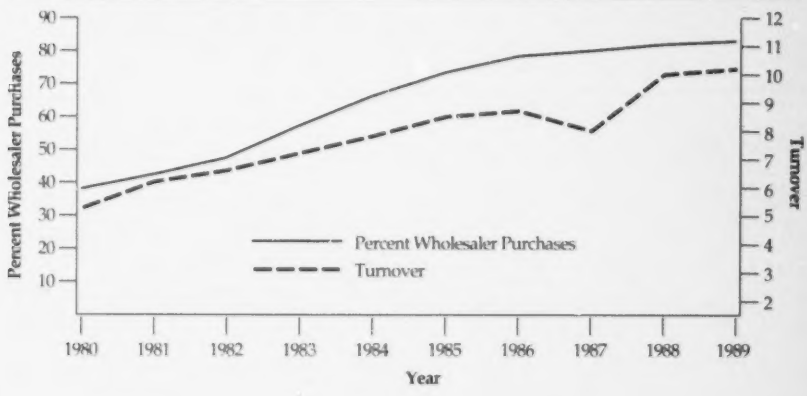


Table 18 Standard time values (minutes)—for use on productivity work sheet

Bed Capacity	< 50	50-99	100-199	200-299	300-399	400-499	≥ 500	Average
Task								
Unit dose	2.46	2.02	2.13	2.06	2.58	2.41	2.86	2.36
Hyperalimentation	31.75	26.07	27.47	26.66	33.26	31.11	36.92	30.46
Large-volume IV (additives)	5.39	4.42	4.66	4.52	5.64	5.28	6.26	5.17
Small-volume IV (additives)	5.98	4.91	5.17	5.02	6.26	5.86	6.95	5.73
Multidose prescription (inpatient)	4.06	3.33	3.51	3.41	4.25	3.98	4.72	3.89
Prescription (outpatient)	8.14	6.68	7.04	6.83	8.53	7.98	9.47	7.81
Large-volume IV (no additives)	4.06	3.33	3.51	3.41	4.25	3.98	4.72	3.89
Antineoplastic agents (injection)	26.36	21.65	22.81	22.14	27.62	25.88	30.66	25.29

Productivity Work Sheet

May be calculated for any time period.
However, weekly is indicated on this form.

Pharmacy Work Load

Task	Standard Time Value (minutes)*	×	Work Units Performed Weekly	=	Total Standard Time (minutes)
Unit dose		×		=	
Hyperalimentation		×		=	
Large-volume IV (additives)		×		=	
Small-volume IV (additives)		×		=	
Multidose prescriptions (inpatient)		×		=	
Prescriptions (outpatient)		×		=	
Large-volume IV (no additives)		×		=	
Antineoplastic agents (injection)		×		=	
					Total

Total standard work load hours = $\frac{\text{total standard time (minutes)}}{60}$ = $\frac{\text{Total}}{60}$ =

Pharmacy Staff Hours

Pharmacy Staff	Available Hours Weekly
Pharmacist (drug distribution)	
Pharmacist (management)	
Pharmacist (clinical practice)	
Technician (drug distribution)	
Support personnel	
	Total available hours weekly

Productivity indicator = $\frac{\text{total standard work load hours}}{\text{total available hours weekly}}$ = _____ = _____†

*Choose appropriate standard time value from Table 18 on page 18.

†If the productivity indicator is less than 1, there may be more pharmacy staff time available than the pharmacy work load requires, and the possibility of overstaffing exists. A productivity indicator of 1 suggests that pharmacy staff hours and work load are in balance. When the indicator exceeds 1, the pharmacy department is generally more productive than usual. Refer to Table 4 for comparative indicators.

Comparative Analysis Work Sheet

If you wish to perform your own analysis, this work sheet may be useful to you.

It is most useful for both survey comparison and trend analysis to express operating statistics in terms of occupied beds or patient days.

If your pharmacy's operating data are affected by any of the variables that appear beneath each entry, adjust the comparative figure by consulting the appropriate table listed.

1. Hospital profile General ☐ Specialized ☐ Other ☐
2. Bed capacity _____
3. Census _____%
4. Beds occupied _____ (multiply line 2 by line 3)
5. Patient days _____ (multiply line 4 by 365)
6. Geographic location (see Table 3) _____

Operating Data	1989 Data	1988 Data	SURVEY Data (Comparable Category)
Inventory* (at cost)			
Use Table 7 for averages and Table 3 to adjust for geographic variation.	$	$	$
Refer to Table 8 if inventory includes IV fluids, irrigation solutions, or antimicrobial agents			
Per occupied bed or patient day	$	$	$
Purchases* (at cost)			
Use Table 7 for averages and Table 3 to adjust for geographic variation.	$	$	$
Refer to Table 8 if purchases include IV fluids, irrigation solutions, or antimicrobial agents			
Per occupied bed or patient day	$	$	$
Estimated inventory turnover ratio†			
Use Table 7 for averages	_____ times	_____ times	_____ times
Pharmacist hours worked per week			
Use Table 11 for averages	_____ hours	_____ hours	_____ hours
Technician hours worked per week			
Use Table 11 for averages	_____ hours	_____ hours	_____ hours
Pharmacy hours open per week			
Use Table 4 for averages	_____ hours	_____ hours	_____ hours
Total annual payroll			
Use Table 11 for averages	$	$	$
Pharmacy floor area			
Use Table 4 for averages	_____ sq ft	_____ sq ft	_____ sq ft

*Include prescription drugs, IV fluids, irrigation solutions, and antimicrobial agents if normally in pharmacy's budget.

†Estimated inventory turnover ratio = $\frac{\text{Yearly purchases at cost}}{\text{Average inventory at cost}}$

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